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Sang-Hoon Shin

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EXAMINER

LLOYD, EMILY M

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DELIVERY MODE

06/12/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/691,552	Applicant(s) SHIN ET AL.	
	Examiner EMILY M. LLOYD	Art Unit 3736	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6-13,15-17 and 19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6-13,15-17 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is in response to Applicant's 15 April 2009 Amendment. The Examiner acknowledges Applicant's amendments to claims 1, 12 and 15, and the cancellation of claims 5, 14 and 18. Currently, claims 1-4, 6-13, 15-17 and 19 are pending.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the spring of claim 3 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

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the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 1, 13 and 16 are objected to because of the following informalities: claim 1 line 5 it appears that “each of channels” should be “each of the channels”; claim 13 line 3 it appears that “a plurality” should be “the plurality” as the plurality of measurement sensors is in claim 12; and claim 16 line 3 it appears that “a plurality” should be “the plurality” as the plurality of measurement sensors is in claim 15. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-4, 6-13, 15-17 and 19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Applicant submits that “These **pins** have excellent tension due to a **spring**” (Applicant's Publication [0030], emphasis added) as enabling “pressure applied to each of the measurement sensors of the multi-channel electrode... can be controlled to be different for each measurement sensor, depending on the curvature of a measured body part” (Applicant's Publication [0031]) as well as

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Applicant's claim limitation "a different pressure is applied to each of the measurement sensors depending on a curvature of the region to be measured during measurement of skin impedance". However, as Applicant's specification lists that the pins have a spring, it is unclear how a single spring can control the pressure applied to different sensors such that they have different pressures. Further, Applicant's drawings do not show a spring, and as such do not clarify if Applicant intended for a single spring or multiple springs to be used with the multiple pins/electrodes of Applicant's invention. Claims 2-4, 6-11, 13, 16, 17 and 19 are rejected as ultimately depending on claim 1, 12 or 15.

6. Claim 6 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The use of a MEMS electrode is described in Applicant's Publication [0032] as being used instead of the Leeno pins. Applicant's 15 April 2009 Arguments indicate that Leeno pins are required for claim 1 to allow "a different pressure is applied to each of the measurement sensors depending on a curvature of the region to be measured during measurement of skin impedance"; further, Applicant's publication ([0030] and [0031] as quoted in the paragraph above) describes the Leeno pins while [0032] provides the alternative use of the MEMS electrode but does not provide for the use of a MEMS electrode in controlling a different pressure to each sensor.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-4, 6-13, 15-17 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claims 1, 2, 4, 6-13, 15-17 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: the spring that enables the limitation of "pressure applied to each of the measurement sensors of the multi-channel electrode... can be controlled to be different for each measurement sensor, depending on the curvature of a measured body part". Claims 2-4, 6-11, 13, 16, 17 and 19 are rejected as ultimately depending on claim 1, 12 or 15.

10. Regarding claims 10 and 11, it is unclear if Applicant is claiming that both the control unit of claim 1 and the personal computer of claim 10 control the apparatus or if Applicant intended to claim that the control unit of claim 1 is part of the personal computer of claim 10. Further, it is unclear if the control unit of claim 1 and the signal processor of claim 10 both generate the channel control signal, or if Applicant intended for one of these devices to control the other in order for a single device to generate the channel control signal.

11. Regarding claim 11, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

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12. Regarding claims 12, 13 and 17, it is unclear if claim 12 step (a) is applying current to the skin before the electrodes of step (b) are applied; it is unclear what limitations the application of the current in step (a) add to the application of current in step (c); and it is unclear if Applicant is claiming applying two different currents at two different times (step (a) and step (c)). Claims 13 and 17 are rejected as ultimately depending on claim 12.

Claim Rejections - 35 USC § 101

13. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

14. Claim 7 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims to the human body ("attached to a location on skin", "applied to the skin" and "output from the skin") constitute non-statutory subject matter. The Examiner notes that amending these limitations to reflect intended use (for example "capable of attachment to a location on skin") will overcome this rejection.

15. Claims 12, 13 and 17 are rejected under 35 U.S.C. 101 because the claimed invention lacks patentable utility. MPEP 2106 IV C 2 requires that a claimed invention "(A) 'transforms' an article or physical object to a different state or thing; or (B) otherwise produces a useful, concrete and tangible result, based on the factors discussed below." Applicant's invention does not transform an article or physical object to a different state or thing. Further, Applicant's invention does not appear to produce a tangible result in that it does not appear to produce a real world (output) result. Instead,

Applicant's invention as claimed performs calculations without producing a result that is available to the user.

Claim Rejections - 35 USC § 103

16. Claims 12, 13 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mapping Acupuncture Points Using Multi Channel Device (Kwok et al.) as modified by United States Patent 6014583 (Nakagawara et al.).

Regarding claim 12, Kwok et al. disclose a method of acquiring a local skin impedance (Method heading in left column of page 69, skin resistance map Figure 4 page 72), comprising: (a) applying steady electrical conditions to the skin for a predetermined time period (120 seconds, page 69 Method paragraph 1 line 16); (b) positioning a multi-channel electrode having a plurality of measurement sensors (flat-ended pins act as electrodes page 69 Hardware Design paragraph 1 line 3) parallel to the region to be measured (multi-channel probe in Figure 3 page 71); and (c) applying the steady electrical conditions and measuring skin impedance at the region to be measured (page 69 Hardware Design paragraph 1 lines 25-30 and line 36; the region to be measured is where the multi-channel probe is located Figure 3), wherein: in (b), a different pressure is applied to each of the measurement sensors depending on a curvature of the region to be measured during measurement of skin impedance (Kwok et al. page 69 Method paragraph 1 lines 2-5 electrodes with the same weight that each rest on a different curvature will apply different pressures as the areas over which the same force is applied will be different; see the Examiner's Response to Arguments below for further explanation/details).

Kwok et al. disclose the claimed invention except for the steps of (a) disposing two electrodes of a constant current source on opposite sides of a region to be measured on a patient's skin and applying a predetermined constant current to the skin through the two electrodes; and (c) applying the predetermined constant current between the two electrodes of the constant current source and measuring impedance while the predetermined constant current flows through the region to be measured.

Nakagawara et al. teach the use of the steps of (a) disposing two electrodes (electrodes 24 Figure 3) of a constant current source (constant current source 22 Figure 3) on opposite sides of a region to be measured on a patient's skin (electrodes 24 are on opposite sides of the voltage detection matrix 32 Figure 3) and applying a predetermined constant current to the skin through the two electrodes (Column 3 lines 30-42); and (c) applying the predetermined constant current between the two electrodes of the constant current source (Column 3 lines 30-42 and Figure 3) and measuring impedance while the predetermined constant current flows through the region to be measured (Column 3 lines 30-62, also Column 5 lines 39-50 and Column 6 lines 15-23 and 37-40). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use such steps of (a) disposing two electrodes of a constant current source on opposite sides of a region to be measured on a patient's skin and applying a predetermined constant current to the skin through the two electrodes; and (c) applying the predetermined constant current between the two electrodes of the constant current source and measuring impedance while the predetermined constant current flows through the region to be measured as taught by Nakagawara et al. to

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measure skin impedance in the invention of Kwok et al. because this would provide a well known alternative to measure impedance with Ohm's Law.

Regarding claim 13, Kwok et al. as modified by Nakagawara et al. teach that the multi-channel electrode comprises: a plurality of measurement sensors arranged in a matrix shape on an electrode surface having a predetermined area (Kwok et al. "precise 16x16 square grid pattern" page 69 Method paragraph 1 line 2 and "8 cm by 8 cm" page 69 Hardware Design paragraph 1 line 6).

Regarding claim 17, Kwok et al. as modified by Nakagawara et al. teach a computer readable medium having embodied therein a computer program (Kwok et al. "computer software developed for the probe" page 70 Software Design paragraph 1 line 4 on a PC page 70 Software Design paragraph 1 line 19; see also Nakagawara et al. entire reference, including claim 1) for the method of claim 12 (see 103 rejection of claim 12 above).

17. Claims 1, 2, 4, 7-11, 15, 16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kwok et al. as modified by Nakagawara et al. as applied to claims 12, 13 and 17 above, and further in view of United States Patent Publication 2002/0062090 (Chai et al.).

Regarding claim 1, Kwok et al. as modified by Nakagawara et al. disclose an apparatus for measuring local skin impedance, comprising: a multi-channel electrode (Kwok et al. multi-channel probe page 36 Hardware Design paragraph 1 line 1) including a plurality of measurement sensors (Kwok et al. flat-ended pin acting as an electrode page 69 Hardware Design paragraph 1 line 3) on an electrode surface (Kwok

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et al. electrode array page 69 Hardware Design paragraph 1 line 4) having a predetermined area (Kwok et al. 8 cm by 8 cm page 69 Hardware Design paragraph 1 line 6); a channel selector (Kwok et al. multiplexers page 69 Hardware Design paragraph 1 lines 9-23) configured to select each of the channels included in the multi-channel electrode according to a channel control signal (Kwok et al. page 70 Software Design paragraph 1 lines 12-13); a constant current source (Nakagawara et al. constant current source 22 Figure 3) configured to apply a predetermined constant current to first and second regions (electrodes 24 Figure 3 and Column 3 lines 30-42), the first and second regions being disposed on opposite sides of a region to be measured (electrodes 24 are on opposite sides of the voltage detection matrix 32 Figure 3); a preprocessing unit configured to filter a potential value measured at each of the channels in the region to be measured (Kwok et al. page 69 Method paragraph 2 line 4, also Nakagawara et al. filter 41 Figure 3), the region to be measured being disposed between the first and second regions (Nakagawara et al. electrodes 24 are on opposite sides of the voltage detection matrix 32 Figure 3), while the predetermined constant current is flowing through the region to be measured (Nakagawara et al. Column 3 line 30-Column 4 line 9); an analog-to-digital converter configured to convert the potential value output from the preprocessing unit into a digital signal (Kwok et al. page 70 Software Design paragraph 1 line 14); and a control unit configured to generate the channel control signal, to process the digital signal output from the analog-to-digital converter, and to control the apparatus (Kwok et al. PC (page 70 Software Design paragraph 1 line 19) running computer software (page 70 Software Design paragraph 1

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lines 4-5 and lines 12-16), see also page 69 Method paragraph 2 lines 1-6), wherein: a different pressure is applied to each of the measurement sensors depending on a curvature of the region to be measured during measurement of skin impedance (Kwok et al. page 69 Method paragraph 1 lines 2-5 electrodes with the same weight that each rest on a different curvature will apply different pressures as the areas over which the same force is applied will be different; see the Examiner's Response to Arguments below for further explanation/details).

Kwok et al. as modified by Nakagawara et al. teach the claimed invention except for an amplifier. Chai et al. teach the use of an amplifier (differential amplifier 80 Figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use such an amplifier as taught by Chai et al. to amplify the signals in the invention of Kwok et al. as modified by Nakagawara et al. because it is well known in the art to amplify electrical signals.

Regarding claim 2, Kwok et al. as modified by Nakagawara et al. and Chai et al. teach that the plurality of measurement sensors is arranged in a matrix shape on the electrode surface (Kwok et al. "precise 16 x 16 square grid pattern" page 69 Method paragraph 1 line 2).

Regarding claim 4, Kwok et al. as modified by Nakagawara et al. and Chai et al. teach that the multi-channel further comprises twenty-five (25) measurement sensors arranged in a 5x5 matrix (Kwok et al. a 5x5 matrix is comprised in a 16x16 matrix, page 69 Method paragraph 1 line 2).

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Regarding claim 7, Kwok et al. as modified by Nakagawara et al. and Chai et al. teach that the constant current source comprises: a positive electrode and a negative electrode (Nakagawara et al. electrodes 24 Figure 3), which are attached to a location on skin centering around the region to be measured (Nakagawara et al. electrodes 24 are on opposite sides of the voltage detection matrix 32 Figure 3) such that the positive and negative electrodes are separated from the region to be measured by a predetermined distance (Nakagawara et al. distances between electrodes in Figure 3), and the predetermined constant current output from the constant current source is applied to the skin through the positive electrode, then output from the skin through the negative electrode, and then flows back in the constant current source (Nakagawara et al. Figure 3 and Column 3 lines 30-42).

Regarding claim 8, Kwok et al. as modified by Nakagawara et al. and Chai et al. teach that the preprocessing unit comprises: a differential amplifier (Chai et al. differential amplifier 80 Figure 1) and a filter (Kwok et al. page 69 Method paragraph 2 line 4).

Regarding claim 9, Kwok et al. as modified by Nakagawara et al. and Chai et al. teach the use of a low pass filter (Chai et al. low pass filter (LPF) 100 Figure 1). Kwok et al. as modified by Nakagawara et al. and Chai et al. do not teach the specific cut-off frequency or the specific type of filter. However, a Butterworth filter with a cutoff frequency of 4 Hz is a well-known low pass filter. Applicant has not disclosed that having the cutoff frequency at any specific number of Hertz within the low filter range and the filter being a Butterworth filter solves any stated problem or is for any particular

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purpose. Moreover, it appears that the filter of Kwok et al. as modified by Nakagawara et al. and Chai et al., or applicant's invention, would perform equally well with a low pass filter with a different low frequency cutoff and a different low pass filter type.

Accordingly, it would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to have modified Kwok et al. as modified by Nakagawara et al. and Chai et al. such that the cutoff frequency was set at 4 Hz or less and the filter was a Butterworth filter because such a modification would have been considered a mere design consideration which fails to patentably distinguish over Kwok et al. as modified by Nakagawara et al. and Chai et al.

Regarding claim 10, Kwok et al. as modified by Nakagawara et al. and Chai et al. teach that the control unit comprises: a personal computer configured to control the apparatus (Kwok et al. PC page 70 Software Design paragraph 1 line 19); and a signal processor configured to generate the channel control signal and express the potential values acquired at each of the channels of the multi-channel electrode (Kwok et al. page 70 Software Design paragraph 1 lines 22-24) as a two-dimensional impedance distribution and a three-dimensional impedance distribution under a control of the personal computer (Kwok et al. Figure 4 is a two-dimension impedance distribution, which shows the same data displayed in a three-dimensional impedance distribution with the degree of shading representing the third axis orthogonal to the paper. The data values used to represent the shading in a two-dimensional distribution are the same values used to represent the three-dimensional curves and shading on a three-dimensional impedance distribution. It would have been obvious to display the data

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used in the two-dimensional distribution of Figure 4 of Kwok et al. in a three-dimensional distribution because different plots give people different views (and thus highlight different aspects) of the same data; see also Nakagawara et al. Figures 6a-6d, and the consideration for time series data Column 5 lines 14-16, and claim 1).

Regarding claim 11, Kwok et al. as modified by Nakagawara et al. and Chai et al. teach that the signal processor is configured to analyze and perform a measurement generally performed by an instrument such as an oscilloscope using the personal computer (Kwok et al. "computer software developed for the probe" page 70 Software Design paragraph 1 line 4; Kwok et al. page 70 Software Design paragraph 1 lines 22-24).

Regarding claim 15, Kwok et al. as modified by Nakagawara et al. and Chai et al. teach a method of measuring local skin impedance (Kwok et al. Method heading in left column of page 69, skin resistance map Figure 4 page 72), comprising: measuring a potential value (Kwok et al. page 69 Method paragraph 1 lines 10-14) at each of a plurality of channels (Kwok et al. "all 256 pins" page 69 Method paragraph 1 line 16) included in a multi-channel electrode (Kwok et al. multi-channel probe" page 69 Hardware Design paragraph 1 line 1) disposed between two electrodes of a constant current source (Nakagawara et al. voltage detection matrix 32 is disposed between electrodes 24 Figure 3), wherein the constant current source is configured to apply a predetermined constant current to a patient's skin through the two electrodes (Nakagawara et al. constant current source 22 and electrodes 24 Figure 3, and Column 3 lines 30-42), the multi-channel electrode includes a plurality of measurement sensors

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(Kwok et al. flat-ended pins act as electrodes page 69 Hardware Design paragraph 1 line 3), the two electrodes are disposed on opposite sides of a region to be measured (Nakagawara et al. electrodes 24 are on opposite sides of the voltage detection matrix 32 Figure 3), and the measurement is performed while the predetermined constant current is flowing through the region to be measured (Nakagawara et al. Column 3 lines 30-62); amplifying (Chai et al. differential amplifier 80 Figure 1) and filtering the potential value at each channel (Kwok et al. page 69 Method paragraph 2 line 4); converting the filtered potential value from an analog format into a digital format (Kwok et al. page 70 Software Design paragraph 1 lines 13-16); and analyzing the potential value in the digital format and displaying the results of the analysis in a form of a spatial impedance distribution in two and three dimensions (Kwok et al. page 70 Software Design paragraph 1 lines 22-24 and paragraph 2 lines 1-12, also Figure 4, additionally see the discussion of spatial impedance distributions in different dimensions in the 103 rejection of claim 10 above), wherein: a different pressure is applied to each of the measurement sensors depending on a curvature of the region to be measured during measurement of skin impedance (Kwok et al. page 69 Method paragraph 1 lines 2-5 electrodes with the same weight that each rest on a different curvature will apply different pressures as the areas over which the same force is applied will be different; see the Examiner's Response to Arguments below for further explanation/details).

Regarding claim 16, Kwok et al. as modified by Nakagawara et al. and Chai et al. teach that the multi-channel electrode comprises: a plurality of measurement sensors arranged in a matrix shape on an electrode surface having a predetermined area (Kwok

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et al. “precise 16x16 square grid pattern” page 69 Method paragraph 1 line 2 and “8 cm by 8 cm” page 69 Hardware Design paragraph 1 line 6).

Regarding claim 19, Kwok et al. as modified by Nakagawara et al. and Chai et al. disclose a computer readable medium having embodied therein a computer program (Kwok et al. “computer software developed for the probe” page 70 Software Design paragraph 1 line 4 on a PC page 70 Software Design paragraph 1 line 19; see also Nakagawara et al. entire reference, including claim 1) for the method of claim 16 (see 103 rejection of claim 16 above).

18. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kwok et al. as modified by Nakagawa et al. and Chai et al. as applied to claims 1, 2, 4, 7-13, 15-17 and 19 above, and further in view of United States Patent 4517983 (Toyosu et al.).

Regarding claim 3, Kwok et al. as modified by Nakagawa et al. and Chai et al. teach that the measurement sensors are pin electrodes made of a metal conductor (Kwok et al. “stainless steel flat-ended pin acting as an electrode” page 69 Hardware Design paragraph 1 lines 2-3). Kwok et al. as modified by Nakagawa et al. and Chai et al. do not teach that the measurement sensors include a spring. Toyosu et al. teach the use of measurement sensors that include a spring (coil spring 13 Figure 6). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use such a spring in the measurement sensors as taught by Toyosu et al. to maintain constant contact and pressure with the area being measured in the invention of Kwok et al. as modified by Nakagawara et al. and Chai et al. because to provide the predictable result of ensuring that all the electrodes are in contact with the body surface

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(Toyosu et al. Column 2 lines 27-29) even if the device is turned or upside down (coil springs 13 would keep pin contacts 5N in contact with the body).

19. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kwok et al. as modified by Nakagawa et al. and Chai et al. as applied to claims 1, 2, 4, 7-13, 15-17 and 19 above, and further in view of United States Patent Publication 2004/0006264 (Mojarradi et al.).

20. Regarding claim 6, Kwok et al. as modified by Nakagawara et al. and Chai et al. disclose the claimed invention except for the multi-channel electrode comprising a micro-electro-mechanical system (MEMS) electrode. Mojarradi et al. teaches the use of a micro-electro-mechanical system (MEMS) electrode ([0019]). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use such a micro-electro-mechanical system (MEMS) electrode as taught by Mojarradi et al. to take measurements in the invention of Kwok et al. as modified by Nakagawara et al. and Chai et al. because this would make the device smaller and able to be used on smaller areas and to better pinpoint acupuncture points.

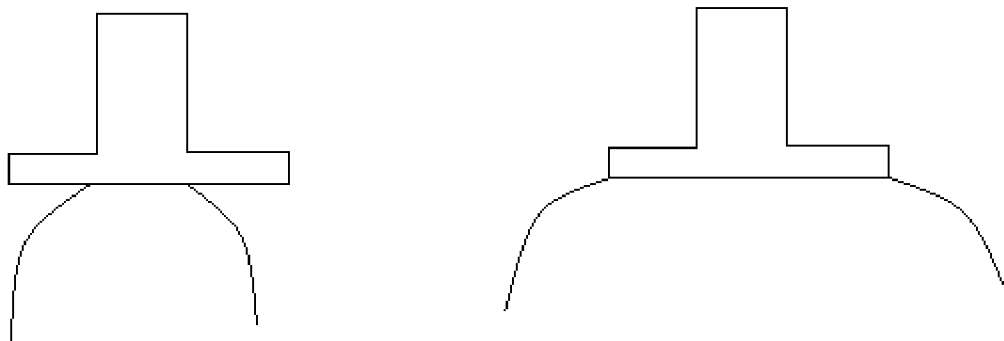
Response to Arguments

21. Applicant's arguments filed 15 April 2009 have been fully considered but they are not persuasive.

22. Regarding Applicant's arguments regarding the pressure applied to the measurement sensors, the Examiner first notes that **pressure = force/area**. For a given sensor that is at rest/not moving, the forces on each side are equal and opposite. However, this says nothing of the pressure on each side, which is based on the area

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over which the force is applied. So the two sensors shown below, each with an equal weight and without any external structures pushing them downward, both apply the same force to the subject but yet apply different pressures, as one sensor is in contact over a larger area than the other. Specifically, the sensor on the left has a higher pressure on its distal side as the same force (the weight of the sensor) is applied over a smaller area, while the sensor on the right has a lower pressure on its distal side as the same force (the weight of the sensor) is applied over a larger area.



23. The Examiner notes that Applicant's arguments appear to be based on the assumptions that:

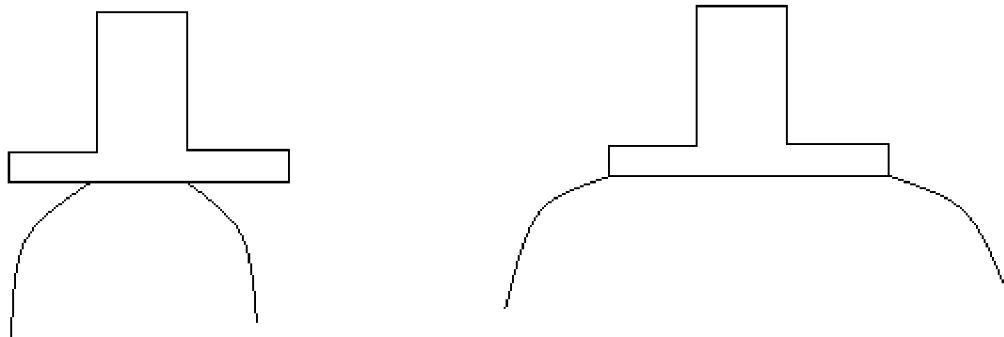
- Each pin is the same size and shape, with the same weight distribution
- Each pin has its own spring (not shown in the drawings or accurately described in this manner in the specification)
- Each spring has the same spring constant (not described in the specification)
- Each spring has its equilibrium position the same distance in the distal/proximal direction as all the other springs (not described in the specification)

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24. Using these assumptions, the Examiner notes that Applicant appears to be arguing that in Applicant's invention the pressure on the proximal end of the sensor is different, when applied to a curved surface, based on the curvature of the surface. The Examiner notes that regarding the proximal end of the sensor, Applicant knows the force applied based on the distance the sensor/spring moved from its equilibrium position as well as the contribution of the weight of the sensor; Applicant also knows the area over which this force is applied (the proximal area of the sensor) such that Applicant knows the pressure applied at the proximal end of the sensor. However, Applicant does not know the pressure applied to the distal end of the sensor, because the area over which the distal end of the sensor is applied is unknown.

25. The Examiner notes that Applicant's limitation of "a different pressure is applied to each of the measurement sensors depending on a curvature of the region to be measured during measurement of skin impedance" does not specify what part of the sensor has a different pressure applied to it.

26. Kwok et al. teach multiple pins moving freely. As each pin has the same weight, each pin applies the same force. However, in the case of different areas



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it is clear that the figure on the left has a higher pressure on its distal surface than the figure on the right. As Applicant is not claiming the surface/side of the sensor where the different pressures are applied and as no part of the body realistically provides a perfect plane that would provide for the same area over every pin, the Examiner notes that the Kwok et al. reference meets the Applicant's limitations.

27. The Examiner further notes that adding the springs of Toyosu et al. to the invention of Kwok et al. would provide for the same structure as Applicant describes in pages 9-11 of Applicant's 15 April 2009 arguments and [0030]-[0031] of Applicant's publication, and would thus provide the same capability of having different pressures over different sensors.

28. Regarding Applicant's argument that "the pressure applied by each measurement sensor in the Kwok et al. reference is merely that of the weight of the measurement sensor" in the second paragraph of page 11 of Applicant's 15 April 2009 amendment, the Examiner notes that this statement is physically impossible. The calculation of pressure without an area over which the force is applied is impossible.

29. Regarding Applicant's argument that the control may be provided by "e.g., springs" in the fourth paragraph of page 11 of Applicant's 15 April 2009 amendment, the Examiner notes that it is unclear if there are any other structures in Applicant's specification that Applicant feels enable the control of the pressure of the different sensors.

30. Applicant's arguments with respect to claim 6 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EMILY M. LLOYD whose telephone number is (571)272-2951. The examiner can normally be reached on Monday through Friday 8:30 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on 571-272-4726. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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